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NEW SPECIES OF LABOPIDEA AND MACROTYLOIDES (HEMIPTERA, MIRIDAE)*.

BY HARRY H. KNIGHT,

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Labopidea arizonae n. sp.

Allied to *simplex* Uhler, but distinguished by the fine, uniformly pale pubescence, shorter rostrum and more tumid frons.

♂. Length 5 mm., width 1.8 mm. Head: width 1.09 mm., vertex .666 mm.; frons more tumid than in *simplex*, pale greenish, becoming fuscous each side of frons and a spot each side of vertex. Rostrum, length 1.09 mm., just attaining hind margin of sternum, pale greenish, last two segments blackish. Antennae: segment I, length .42 mm.; II, 1.6 mm.; III, 1.18 mm.; IV, broken; black. Pronotum: length .72 mm., width at base 1.54 mm.; calli becoming blackish on hind margins.

Dorsum clothed with fine, simple, pale to yellowish pubescence, with only a few stiff brown hairs set around margins of calli and on base of head. Color greenish, basal margin of pronotum and the clavus dusky green, tibiae dusky, tarsi blackish; membrane uniformly dark fuscous. Genital claspers have a general similarity to those of *simplex*, but the left clasper more broadly and sharply incurved above.

♀. Length 5.1 mm., width 1.9 mm. Head: width 1.12 mm., vertex .71 mm. Rostrum, length 1.12 mm., scarcely attaining hind margin of sternum. Antennae: segment I, length .38 mm.; II, 1.48 mm.; III, 1.06 mm.; IV, .47 mm. Pronotum: length .75 mm., width at base 1.62 mm. More robust than the male but very similar in pubescence and coloration, although the head and calli without black marks.

Holotype: ♂ April 5, 1924, Tucson, Arizona (A. A. Nichol); author's collection.

Allotype: same data as the type.

Paratypes: ♀ April 12, 1924, Tucson, Arizona (A. A. Nichol). 22 ♂ ♀ April 16, 1928 (alt. 2400 ft.), Superior; ♂, 3 ♀, May 20, 1928, (alt. 5000 ft.), Empire Mts., Ariz. (A. A. Nichol).

Labopidea pallida n. sp.

Allied to *simplex* Uhler, but smaller; distinguished by the pale color, soft pale pubescence, with front of head, antennae, and calli only, black.

♀. Length 3.34 mm., width 1.8 mm. Head: width 1 mm., vertex .58 mm.; pale, frons, tylus, apical half of lora, and margins of juga, black. Rostrum, length 1.15 mm., just about attaining hind margins of middle coxae, pale, apex black. Antennae: segment I, length .355 mm.; II, 1.23 mm.; III, .68 mm.; IV, broken; black. Pronotum: length .55 mm., width at base 1.18 mm., pale, calli and spot at top of coxal cleft, black.

Color pale yellowish, probably tinged with green in life, venter greenish;

basal margin of coxae, tarsi, and spines on tibia, blackish. Clothed with soft pale pubescence. Embolar margins strongly arcuate, cuneus triangular, membrane short, scarcely covering tip of abdomen, pale.

Holotype: ♀ May 10, 1926, Tampico, Washington (E. W. Davis); author's collection.

Labopidea viridula n. sp.

Distinguished by the uniformly green color, prominent tylus and short rostrum; clothed with pale and fuscous pubescence intermixed.

♂. Length 4.7 mm., width 1.5 mm. Head: width .89 mm., vertex .50 mm.; vertex flattened on middle, leaving a blunt ridge at base; tylus prominent on base, extending well forward of frons as viewed from above, sloping sharply backward so that apex lies within a vertical plane that would pass just behind base of antenna. Rostrum, length 1.03 mm., just attaining hind margin of sternum, green, apex black. Antennae: segment I, length .44 mm.; II, 1.95 mm., greenish to fuscous; III, 1.48 mm., fuscous; IV, broken. Pronotum: length .65 mm., width at base 1.27 mm.; disk moderately flat, lateral margins straight, hind margin very slightly sinuate; mesoscutum moderately exposed, uniformly green like the scutellum.

Color uniformly bluish green, head and calli more yellowish, hind tibiae somewhat yellowish, apical segment of tarsi fuscous. Membrane uniformly pale fuscous, veins green, a white calloused mark bordering larger areole. Clothed with pale simple pubescence, intermixed on the dorsum with fuscous hairs, but the specimen is so badly rubbed that the exact proportion cannot be stated.

Genital claspers very similar to those of *simplex*, indicating that this type of clasper is chiefly generic in character.

Holotype: ♂ June 1926, Sheep Creek, Duchesne County, Utah (Vasco M. Tanner); author's collection.

Labopidea planifrons n. sp.

Allied to *allii* Kngt., and might easily be taken for that species, but the male genitalia are very different while the calli and anterior margin of pronotum are scarcely raised above the flat surface of the disk.

♂. Length 4 mm., width 1.2 mm. Head: width .83 mm., vertex .50 mm.; similar to *allii* but vertex broader with vertex and frons nearly flat. Rostrum, length .59 mm., just attaining hind margins of front coxae. Antennae: segment I, length .32 mm.; II, .99 mm.; III, .88 mm.; IV, broken; greenish to dusky brown, segment I blue green. Pronotum: length .46 mm., width at base 1.01 mm.; disk strongly flattened, calli scarcely raised above level of disk.

Color bluish green, more yellowish beneath; membrane uniformly pale dusky, veins green. Clothed with simple pale to yellowish pubescence much as in *allii*. Genital claspers distinctive, left clasper as viewed from the rear very suggestive of *Melanotrichus flavosparsus* Sahlbg., but the lower margin is formed like a tightly compressed hook, the extreme tip turned outward and upward; right clasper ligulate, the broad distal margin turned sharply inward, contracted to form a rather long acuminate spine which is directed obliquely upward.

Holotype: ♂ August 7, 1922, Brookings, South Dakota (H. C. Severin); author's collection.

Labopidea ainsliei n. sp.

Allied to *allii* Kngt., but differs in the wider vertex, shorter pubescence and pale yellowish green color; distinguished by form of male genital claspers.

♂. Length 3.5 mm., width 1.15 mm. Head: width .86 mm., vertex .50 mm.; nearly as in *allii* but vertex somewhat wider. Rostrum, length .62 mm., just attaining hind margins of front coxae. Antennae: segment I, length .28 mm.; II, 1.12 mm.; III, .80 mm.; IV, .42 mm.; greenish yellow, last two segments brownish. Pronotum: length .42 mm., width at base .92 mm.; calli and anterior margin of disk slightly raised as in *allii*.

Clothed with rather short, fine pale pubescence. Color greenish yellow, hemelytra more green, but not blue green as in perfect specimens of *allii*. Membrane and veins pale. Genital claspers distinctive; left clasper more slender than in *allii*, basal lobe produced above to form an acuminate spine; right clasper slender, widened at base to form a subtriangular lobe dorsally, apical half slender, incurved and acuminate.

Holotype: ♂ June 25, 1925, Sioux City, Iowa (C. N. Ainslie); author's collection.

Labopidea simplex nigritiventris new variety.

Structurally very similar if not identical with *simplex* Uhler, but distinguished by having the venter, tibiae, tylus, frons, juga, and tip of lora, black; mesoscutum and more or less on basal half of scutellum also black.

Type: ♂ Aug. 15-22, 1924, Pingree Park, Colorado (Drake & Hottes); author's collection.

Labopidea simplex (Uhler). The writer took a good series of this species, Aug. 9, 1925, Veta Pass, Colorado, where the bugs were evidently breeding on *Senecio eremophilus* Rich., one of the ragworts. The plants were growing in a little valley along the banks of small stream which the road crosses on the way up to Veta Pass from the east slope, altitude probably 8000 to 8500 feet.

Macrotyloides apicalis Van Duzee. Specimens of both sexes are at hand from Quincy, Calif., July 23, 1912, collected by Dr. E. D. Ball; also from Fresno, Calif., June 20, 1926 (C. J. Drake). This species was described from the female only which is conspicuously marked with black on tip of wing membrane. In the male the membrane is uniformly pale, and this at first suggested that another species was present. After failing to find a male with black apex to membrane the fact dawned that the male of this species is differently colored. The male genital claspers are very distinctive; the left clasper in the shape of a crescent, of which the dorsal horn terminates as an acute point; right clasper almost crescent-shaped, but the lower half thicker with apex bearing a short incurved hook, the dorsal arm long, gradually acuminate, its apex reaching median line of segment; within the crescent formed by right clasper, a thin blade of chitin extends from dorsal margin of genital segment and terminates in the shape of a fish tail.

Allotype: ♂, July 23, 1912, Quincy, California (E. D. Ball); author's collection.

Macrotyloides symmetricus n. sp.

Allied to *vestitus* Uhler, but differs in the more sharply prominent tylus, and in lacking black bristles on frons and base of tylus; distinguished by the

different and essentially bilaterally symmetrical genital claspers.

♂. Length 4.2 mm., width 1.5 mm. Head: width .77 mm., vertex .385 mm.; vertex nearly flat, tylus sharply prominent, distinctly compressed; clothed only with silvery and pale pubescence, although with one black bristle each side on the bluntly defined carina. Rostrum, length 2.1 mm., almost reaching base of genital segment, greenish yellow, apex blackish. Antennae: segment I, length .326 mm., yellowish green, shorter than in *vestitus*; II, 1.45 mm., green to brownish; III, 1.18 mm., fuscous; IV, broken. Pronotum: length .59 mm., width at base 1.12 mm.; form nearly as in *vestitus* but calli less prominent.

Coloration and pubescence nearly as in *vestitus* except without black bristles on head; clothed with silvery, sericeous pubescence and intermixed with prominent, erect black bristle-like hairs which are spaced for the most part about the length of a bristle apart. Membrane pale fuscous, veins green. Genital claspers very distinctive, in form apparently bilaterally symmetrical, a rare combination in the family Miridae; both claspers being very similar in form to the right clasper of *vestitus*.

Holotype: ♂ Aug. 27, 1920, alt. 8800 ft., Estes Park, Colorado (H. C. Severin); author's collection.

RECORDS OF BUMBLEBEEES FROM ALBERTA, CANADA. (BREMIDAE: HYM.).

BY THEODORE H. FRISON,

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Few political areas in North America offer so much in the way of interest and instruction to the student of the geographical distribution of bumble-bees as the Province of Alberta in western Canada. This is due not only to the fact that extremes in elevation between certain portions of Alberta bring together species of pronounced northern and southern tendencies, a condition duplicated in many parts of western North America, but likewise to the fact that Alberta is a meeting ground of species with decided eastern and western affinities. A somewhat similar state of affairs, though less marked, occurs in the Dakotas as attested by a study of approximately 900 specimens of bumblebees from South Dakota submitted to me for determination by Professor H. C. Severin and recorded by him in the "Sixteenth Annual Report of the State Entomologist of South Dakota," 1925, pp. 17-20.

Scattered records of bumblebees collected in Alberta have been published here and there in the literature of our subject and recently a comprehensive list of the species collected in Jasper National Park and Edmonton has been published by Ferris Neave in Entomological News, xxxvii, 1926, pp. 252-254. This article by Neave brings out in particular a good idea of the vertical or altitudinal range of certain species. In 1926, due to the kindness of Mr. George Salt, I was privileged to study a large series of bumblebees which he had collected in Alberta in 1923, 1924 and 1925. Since some of the species and varieties collected by Mr. Salt have not been previously recorded from Alberta, others confirm previous records based upon single captures, and because the collection as a whole affords such a good picture of the bumblebee fauna of parts of Alberta, the publication of these records *in toto* is justified.

1. *Bremus auricomus* (Robt.). Calgary, 2♀ ♀, June 3-6.
2. *Bremus nevadensis* (Cress.). Calgary, 1♀, May 30; 15♀ ♀, June 2-6; 2♀ ♀, June 3-16; 1♀, August 4; 1♀, August 27. Edmonton, 2♀ ♀, June 2-6.
3. *Bremus separatus* (Cress.). Calgary, 1♂, August 27.
4. *Bremus rufocinctus* (Cress.). Calgary, 1♂, August 21; 2♂ ♂, September 2.
5. *Bremus rufocinctus* var. *prunellae* (Ckll. & Porter). Calgary, 1♂, August 20.
6. *Bremus borealis* (Kby.). Calgary, 1♀, August 5; 1♂, August 28; 2♂ ♂, September 5.
7. *Bremus fervidus* (Fab.). Burdett, 1♀, May 10. Calgary, 2♀ ♀, May 20-31; 2♀ ♀, June 3; 7♀ ♀, August 5-28; 1♀, September 5.
8. *Bremus californicus* (F. Sm.). Bilby, 1♀, June 29. Calgary, 2♀ ♀, August 10-10. Edmonton, 3♀ ♀, June 2-29.
9. *Bremus occidentalis* (Cress.). Calgary, 1♀, May 29; 1♀, August 21. Banff, 9♂ ♂, August 12-18; 2♀ ♀, August 13-18.
10. *Bremus terricola* (Kby.). Tofield, 2♀ ♀, May 12. Calgary, 1♀, May 12; 3♂ ♂, August 28. Bilby, 5♀ ♀, June 2-10; 2♀ ♀, June 8-25. Edmonton, 1♀, April 26; 25♀ ♀, May 2-30; 3♀ ♀, June 2.
11. *Bremus ternarius* (Say). Edmonton, 3♀ ♀, April 25-30; May 2-30; 4♀ ♀, June 2-6. Bilby, 2♀ ♀, May 8-21; 16♀ ♀, June 2-29; 5♀ ♀, June 11-30. Calgary, 2♀ ♀, May 12-31; 1♀, June 16; 2♀ ♀, July 20-27; 1♀, August 5; 1♀, August 22. Tofield, 3♀ ♀, May 12. Banff, 2♀ ♀, August 18; 1♂, August 18.
12. *Bremus huntii* (Greene). Soda Lake, 1♀, May 18. Calgary, 2♀ ♀, May 20; 3♀ ♀, June 3; 2♀ ♀, July 16-27; 7♀ ♀, August 4-27. Burdett, 1♀, May 22. Edmonton, 1♀, June 2.
13. *Bremus huntii* var. *rufosuffusus* (Ckll.). Burdett, 1♀, May 22. Calgary, 1♀, August 27.
14. *Bremus bifarius* var. *nearcticus* (Handl.). Banff, 10♂ ♂, August 13-18; 16♀ ♀, August 13-18.
15. *Bremus sylvicola* (Kby.). Banff, 1♂, August 18. Calgary, 2♂ ♂, August 5-21.
16. *Bremus melanopygus* (Nyl.). Bilby, 7♀ ♀. June 21-30. Banff, 2♀ ♀, August 13-18; 1♂, August 13. Edmonton, 4♀ ♀, May 1-28; 1♀, June 2.
17. *Bremus virgans* (F. Sm.). Bilby, 32♀ ♀, June 2-30. Edmonton, 12♀ ♀, May 28-30; 3♀ ♀, June 2-6.
18. *Bremus frigidus* (F. Sm.). Edmonton, 10♀ ♀, April 21-30; 24♀ ♀, May 1-30; 2♀ ♀, May 28-30; 1♀, June 2♀ ♀, June 6. Bilby, 1♀, May 24; 23♀ ♀, June 8-30; 3♂ ♂, June 14-19; 3♀ ♀, June 2-29. Tofield, 1♀, May 12. Soda Lake, 1♀, May 18.
19. *Bremus couperi* (Cress.). Edmonton, 1♀, May 30; 2♀ ♀, June 2-6.
20. *Bremus perplexus* (Cress.). Bilby, 4♀ ♀, June 8-9; 1♀, June 21. Edmonton, 36♀ ♀, May 12-30; 3♀ ♀, May 29; 15♀ ♀, June 2-23; 1♀, June 13.
21. *Bremus flavifrons* (Cress.). Calgary, 1♀, May 12; 1♀, June 12, 2♀ ♀, July 7-14; 3♂ ♂, August 5-28; 6♀ ♀, August 5-27; 1♀, August 21.

Edmonton, 8♀♀, May 28-30; 3♀♀, June 2-6. Bilby, 9♀♀, June 8-29; 2♀, June 30; 1♀, August 21.

22. *Bremus flavifrons* var. *dimidiatus* (Ashm.). Calgary, 1♀, May 26; 1♀, July 16; 2♂, August 5-11; 4♀♀, August 17-27; 1♀, August 11; 1♂, September 5. Edmonton, 8♀♀, May 28-30; 4♀♀, June 6; 1♀, June 23. Bilby, June 8; 6♀♀, June 2-29.

23. *Psithyrus suckleyi* (Greene). Banff, 2♂, August 15. Edmonton, 2♀♀, May 28; 9♀♀, June 2-6. Calgary, 1♀, May 24; 2♀♀, June 3-12. 1♀, Bilby, 7♀♀, June 11-25.

24. *Psithyrus insularis* (F. Sm.). Banff, 8♂♂, August 13-16; 3♀♀, August 16-18. Bilby, 2♀♀, June 24-25. Edmonton, 1♀, May 30; 2♀♀, June 6. Calgary, 3♀♀, June 3-16; 2♀♀, July 16-20; 7♂♂, August 4-28.

25. *Psithyrus fernaldae* Franklin. Edmonton, 2♀♀, June 2-6. Bilby, 1♀, June 25. Banff, 1♂, August 16.

EPHEMERID NOTES WITH DESCRIPTION OF A NEW SPECIES.*

BY J. McDUNNOUGH,

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Ephemerella cornuta Morg.

Ephemerella dorothea McDunnough (nec Needham) 1925, Trans. Roy. Soc. Can. XIX, 212.

In my paper on the Ephemeroptera of Covey Hill, Que., I recorded the species *E. dorothea* Needham as extremely common. In the summer of 1927 my assistant, Mr. G. S. Walley, took numerous full-grown nymphs in the Covey Hill brook at a time when the so-called *dorothea* were emerging, so that the association of nymph and adult is fairly safe. These nymphs, however, proved to agree excellently with the description of *cornuta* Morg. except for the somewhat smaller size, and a careful reading of Dr. Morgan's description of the male sub-imago (the only other stage known to her) made it evident that the Covey Hill species should be known as *cornuta* Morg. and not *dorothea* Needh.

Through the kindness of Dr. P. Claassen I have examined some slides of the original nymphal material of *dorothea* and this nymph is certainly quite distinct from that of *cornuta*, among other features there being no horns below the antennae. The adults are evidently quite similar; my first determination of the Covey Hill-species was based on a study of the adult type material of *dorothea* in alcohol and the only distinction I noted was the paler color of the types. This, at the time, I supposed due to a teneral condition and to the immersion in alcohol, but it is evidently a natural feature; the genitalia of the Covey Hill males bear great similarity to Needham's figure of these parts in *dorothea* but show a row of small, dorsal spines at the base of each penis-lobe not given in Needham's figure and arranged much as in my figure of *invariata* Wlk. (op. cit. Pl. I, fig. 6).

Ephemerella infrequens McD.

Ephemerella inermis Needham (nec Eaton), 1927, Ann. Ent. Soc. Am. XX, 114, fig. 1, T.

Judging by the figure of the male genitalia given by Needham as cited above his indentification of *inermis* Eaton in his valuable paper on the Rocky Mt. species of *Ephemerella* was erroneous; the species before him was evidently *infrequens* McD. In the description of this latter species (Can. Ent. LVI, 223)

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

I called attention to the fact that *inermis* showed no apical enlargement of the second joint of the forceps, my determination being based on a slide of the genitalia of one of the type lot of males from the Arkansas Canyon, Colo., received through the courtesy of Dr. Banks of the Cambridge Museum of Comparative Zoology; there is also a long series before me from the Platte Canyon, Colo., which agrees with this paratype.

Apart from the genitalic differences the two species are very similar but *inermis* is on the whole somewhat smaller and darker-colored, the thorax showing scarcely any of the ruddy tints found in *infrequens*; this species, I might incidentally note, was extremely common at Seton Lake Creek, Lillooet, B. C. in 1926.

Baetis pluto McD.

Baetis rusticans McD. 1925, Trans. Roy. Soc. Can. XIX, 217 (♀ nec ♂).

The type material of *pluto* consisted of a male from Covey Hill, Que. (holotype) and a male from the Ottawa region. During the summer of 1927 my assistant, Mr. G. S. Walley, was successful in securing a long series of both sexes of this species at Covey Hill which clearly shows that the females which I associated with *rusticans* in the description of this species actually belong to *pluto*. Typical *pluto* females, as distinguished from other *Baetis* females occurring in the same region, show an almost unicolorous chocolate-brown head, a deep brown abdomen, distinctly tinged with wine-color, and brown crossveins on the primaries; generally the intercalaries in the first interspace of primaries are wanting and there is one (occasionally two) intercalary on the secondaries between veins two and three as in the male sex; a further very useful character is found in the shape of the rear margin of the head which is bilobed with a distinct narrow median v-shaped indentation, whereas in allied species of *Baetis* from the same region this margin is gently sinuous with a shallow, broadly u-shaped, median excavation.

Cinygma ramaleyi Dodds.

Ecdyurus ramaleyi Dodds, 1923, Trans. Am. Ent. Soc., XLIX, 101.

Iron tollandi Dodds, 1923, Trans. Am. Ent. Soc., XLIX, 109.

These two names refer to a single species, *ramaleyi* having priority. The differences in male genitalia figured by Dodds are not actual but simply due to distortion of the parts; the normal position is that figured for *ramaleyi* (fig. 9) and if we imagine the penes twisted about 180° we can readily see how his figure 25 may result.

In dried or alcohol specimens such variation is common all through the group, as Needham has recently shown for *mimus* (Can. Ent., 1927, p. 134), but if slide material is made by treating the parts with a 10% solution of caustic potash, the normal position is resumed; typical material of *tollandi* received from Dodds and so treated has resulted in genitalia similar to those figured for *ramaleyi* and amongst my material of this species from the Canadian Rockies specimens have frequently occurred which match the *tollandi* figure excellently. The synonymy appears, therefore, to be reasonably sure, especially as the two so-called species came from exactly the same locality.

Rhithrogena anomala n. sp.

Male. Eyes (living) slate gray. Head, thorax and dorsum of abdomen deep brown; pleura brown tinged with ochreous at base of wings; sternum brown, tinged with ochreous laterally, especially around bases of legs; abdomen ventrally

paler than above, more ochreous brown. Legs yellow-brown with paler tarsi; femora with a small median purple brown spot, rather indistinct and not forming the longitudinal dark dash which is characteristic of most species in the group. First joint of fore tarsi about one-fifth the length of the second one. Wings hyaline with brown venation, the crossveins fine and not well-marked, especially in costal region; in the pterostigmatic area they anastomose as usual to form a network. Length of body and forewing 7 mm.

Holotype—♂, Knowlton, Que., June 22 (G. S. Walley); No. 2666 in the Canadian National Collection, Ottawa.

Paratype—♂, S. Bolton, Que., June 17 (W. J. Brown).

The species very much resembles *jejuna* Eaton (*fusca* Wlk.) and *impersonata* McD. but differs in the male genitalia, the penes possessing a short, blunt spine with slightly serrate edge, situated ventrally about midway between apex and base of each lobe; the inner apical edge of each penis-lobe is also distinctly serrate.

OBSERVATIONS ON THE CHERMIDAE (HEMIPTERA: HOMOPTERA). PART V.¹

BY G. F. FERRIS,

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Genus *Leuronota* Crawford.

1914. Crawford, U. S. Nat. Mus. Bull. 85:67.

As far as I am aware, there are known at the present time but four species which are referred to this genus. Of these, one is recorded from Florida, one from Texas and Arizona, one from Nicaragua and one from Brazil.

Two species are at hand in my Mexican material. One of these I am, with hesitation, referring to a named form and the other—with greater hesitation—I am describing as new. Both species are represented by nymphs as well as adults and these nymphs prove to be extremely interesting forms.

The genus is referred by Crawford—and apparently quite correctly—to the Triozinae, but the nymphs depart rather widely from the characteristic triozine form. In this typical form, as I have indicated in earlier papers of this series, the wing-pads are produced forward, the head, as it were, being sunken into the shoulders. In the nymphs of these two species of *Leuronota* there is but the faintest indication of this feature. They remain, however, typically triozine in certain other respects. In all the triozine nymphs that I have examined practically the entire dorsum, excepting only the sutural lines and a small area at the base of the abdomen is sclerotic, the wing pads being continuous with a sclerotic area that is interrupted only by the mesal suture which ruptures at the time of molting. This condition does not appear in any nymphs other than triozines that I have seen.

Leuronota maculata (Crawford).

1914. *Leuronota maculata* (Crawford), U. S. Nat. Mus. Bull. 85:68:figs.

MATERIAL EXAMINED. Nymphs and adults from *Celtis iguanea*, near Sihuatenejo, Guerrero, Mexico, Feb. 1926 (G. F. Ferris). The species has previously been recorded, on the basis of adults only, from *Condalia obovata* and

1.—Continued from Canadian Entomologist LX, 109 (1928).

Colubrina texana from Texas, and without indication of host from Texas and Arizona.

Notes. The adults at hand differ slightly in their wing markings from the figure given by Crawford and Crawford's figures do not deal with certain other characters, so that the identification of my specimens with *L. maculata* is somewhat problematical.

The nymphs cause a distortion and folding of the leaves of the host. They are apparently identical with the nymphs of *L. michoacana*, which I am describing below.

***Leuronota michoacana* n. sp.**

Fig. I.

MATERIAL EXAMINED. Nymphs and adults from undeterminable host near Chinicuila, Michoacan, Mexico, Feb. 1926 (G. F. Ferris). The nymphs cause a folding and distortion of the leaves.

ADULT. Length, including folded wings, 4 mm. A slender species of a generally dark brown color with pale markings on head and thorax and a pale area along the costal border of the wing. With the general characteristics of the genus well developed.

Head slightly wider than prothorax, only slightly deflexed; with the genal cones slightly below the plane of the vertex, acute and quite divergent. Antennae slender, about as long as head and thorax.

Thorax (Fig. I M) with the pronotum less than half as long as the praescutum and with a distinct anterior median epiphysis, the derm smooth and not at all hairy. Posterior legs with two large and several smaller teeth at the base of the tibia (Fig. I C) and with a comb of small setae and four stout teeth at the apex. (Fig. I J). Anterior wings (Fig. I K) three times as long as wide, rather acutely pointed, deeply pigmented except for a hyaline area along the anterior border and a pale anal area. Posterior wings (Fig. I L) with the venation quite well developed and with the entire surface beset with minute points.

Abdomen with the plates strongly sclerotic, the sternites bordered by an area in which the pigment is laid down in a mosaic of minute plates. Genitalia of female (Fig. I D) short and blunt, the dorsal valve exceeding the ventral, the circum-anal pore ring composed of an irregularly double row of pores (Fig. I E) Genitalia of the male (Fig. I I) with the proctiger not greatly exceeding the claspers in length.

NYMPH. (Fig. I A). Length on slide 2 mm. Departing from the typical triozine form in that the wing pads are not produced anteriorly, but otherwise of this general type, the entire dorsum sclerotic except for the sutural areas and a narrow basal area on the abdomen. Antennae (Fig. I F) short, seven-segmented, the third segment curiously swollen and constricted. Sectasetae occurring only in a marginal series, very small, slender and sharply pointed (Fig. I G) and interspersed with small, simple setae. Dorsum with very few, small, simple setae. Tarsi with the empodium present (Fig. I B). Circum-anal pore ring confined to the ventral side of the abdomen but much expanded and consisting of

an extremely sinuous single row of pores (Fig. I. H).

Notes. The nymph of this species is apparently identical with that of *L. maculata*. The adult, however, approaches very closely *L. leguminicola* Crawford, which is recorded from Brazil, from which it differs apparently in a num-

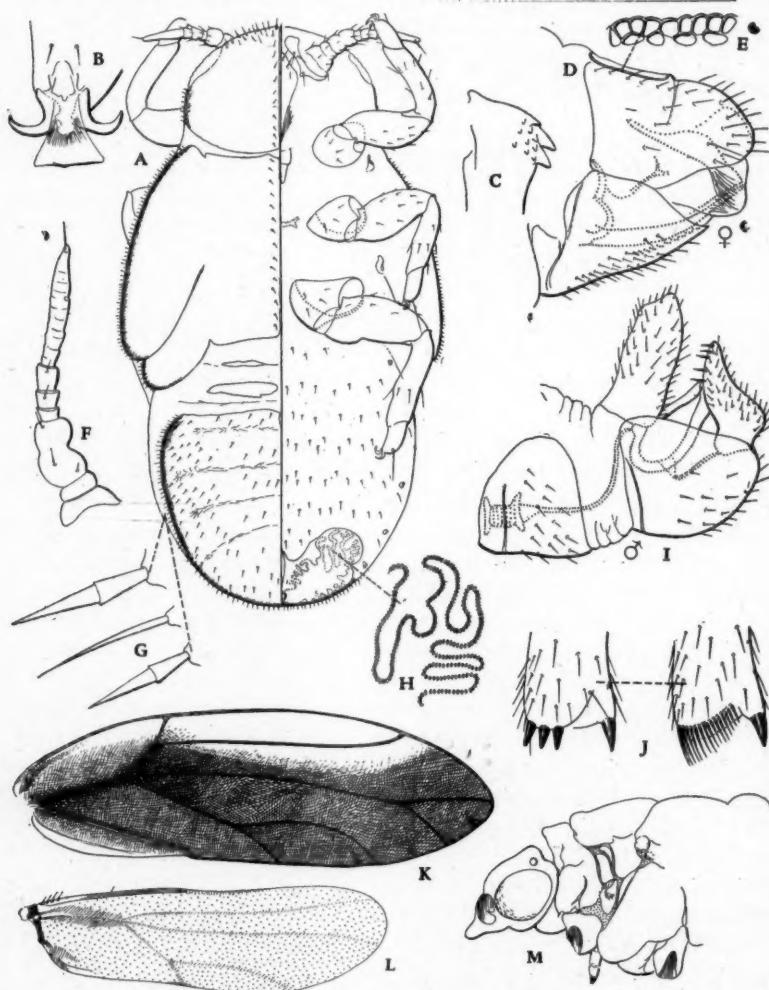


Fig. 1. *Leuronota michoacana* n. sp. A.—Mature nymph; B.—apex of tarsus of nymph; C.—base of posterior tibia of adult; D.—genitalia of female; E.—portion of circum-anal pore ring of female; F.—antenna of nymph; G.—seta and setasetae from margin of nymph; H.—portion of circum-anal pore ring of nymph; I.—genitalia of male; J.—apex of posterior tibia of adult; K.—fore wing; L.—posterior wing; M.—profile of head and portion of thorax of adult.

ber of details, the latter species being described as having the wings four times as long as wide and being apparently without the pale markings of head and thorax.

Genus *Carsidara* Walker.

1882. Scott, Trans. Ent. Soc. London, p. 466.
 1914. Crawford, Bull. U. S. Nat. Mus. 85:57.

Of this genus, as understood by Crawford, I have at hand a single species represented by both nymphs and adults. As far as I am aware no nymphs of any species have here-to-fore been described.

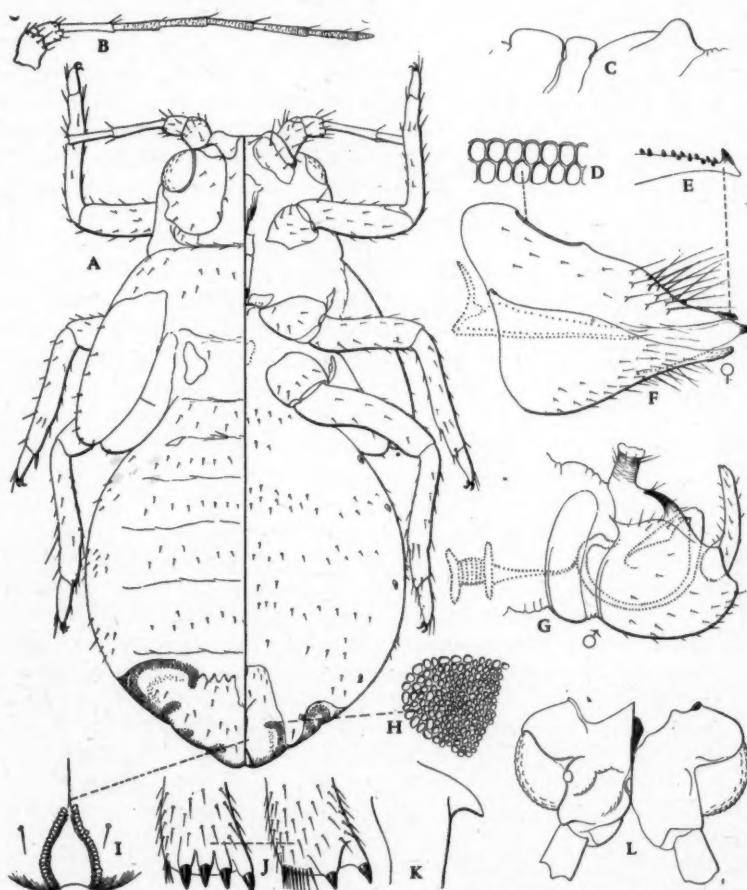


Fig. 2. *Carsidara gigantea* Crawford. A.—mature nymph; B.—antenna of nymph; C.—profile of portion of notum of thorax, showing post-scutellar elevations; D.—portion of circum-anal pore ring of female; E.—apex of dorsal valve of genitalia of female; F.—genitalia of female; G.—genitalia of male; H.—portion of pore area of nymph; I.—anus of nymph; J.—apex of posterior tibia of adult; K.—base of posterior tibia of adult; L.—head of adult.

On the basis of the nymphs Crawford's assignment of this genus to the same group as *Freysuila* is entirely justified, the nymphs of the two genera being very similar. The adult of *Carsidara*, however, possess but a single claw-like spine on the posterior tarsus, while in *Freysuila* there are two such spines.

Carsidara gigantea Crawford.

Fig. II.

1914. *Carsidara gigantea* Crawford, Crawford, U. S. Nat. Mus. Bull. 85:57; figs.

MATERIAL EXAMINED. Nymphs and adults from *Ceiba* sp., Manzanillo, Colima; Petatlan, Michoacan; mouth of the Balsas River, Guerrero; and Minatitlan, Vera Cruz, Mexico (G. F. Ferris).

ADULT. I add the following notes to the description of Crawford. Postscutellum of the metathorax (Fig. II. C) with a pair of low, rounded prominences. Posterior tibiae with an extremely large spur (Fig. II. K) at the base and with stout, spur-like setae at the apex as indicated in Fig. II. J. Genitalia of female (Fig. II. F) with the circum-anal pore ring composed of two rows of pores (Fig. II. D) and with the dorsal valve acutely pointed, terminating in a recurved spur and bearing numerous small, black teeth. Genitalia of the male (Fig. II. G) with the proctiger extremely small, the claspers slender and the "ventral valve" bearing dorsally, on each side a sharp, recurved spur.

NYMPH (Fig. II. A). Length on slide 2.5 mm. Of the psylliine type, the derm membranous throughout except for a large ocular patch, a small patch on the ventral side at the base of the antenna, the wing-pads and a small dorsal thoracic patch and a comparatively small apical area of the abdomen. Antennae (Fig. II. B) ten-segmented, slender. Legs without trochanter and tarsi apparently without empodium. Anus at the extreme tip of the abdomen, surrounded by a simple ring of pores (Fig. II. I). The pore areas on the caudal sclerotic area appear in three separate, curved bands which are composed of many small pores (Fig. II. H) and which are partially on both dorsal and ventral sides of the body. Body setae very few, extremely small, simple.

Notes. The identification of this species as *C. gigantea* is somewhat doubtful as the description given by Crawford is deficient in some details.

The specimens taken at the mouth of the Balsas river and at Minatitlan were found in company with specimens of what I take to be, and am here recording as, *Epicarsa corniculata* Crawford. But one type of nymph was taken and consequently its definite assignment to a particular adult would be doubtful were it not that the specimens of *C. gigantea* from Manzanillo were in part obtained from nymphs which were isolated in a bottle.

Epicarsa corniculata Crawford.

Fig. III.

1914. *Epicarsa corniculata* Crawford, Crawford, Bull. U. S. Nat. Mus. 85:56; figs.

SPECIMENS EXAMINED. From *Ceiba* sp., Petatlan, Michoacan and mouth of the Balsas River, Guerrero, Mexico (G. F. Ferris). Adults only. The species has previously been recorded only from a single male, from Para, Brazil.

Notes. The description given by Crawford, having been based upon the male only and being deficient in respect to certain details, leaves a certain amount of doubt in connection with this identification. It may be that two species are involved.

The genitalia of the male (Fig. III. E) are very small, the "ventral valve" almost globular and bearing a small spur on each side on the dorsal margin, the claspers slender, the proctiger short but with lateral expansions which show only when viewed from the dorsal aspect and which I am not able to figure adequately from my specimens.

The genitalia of the female (Fig. III. A) are quite peculiar. In the single available specimen they are deflexed almost at right angles to the axis of the body, although this may possibly be accidental. Both dorsal and ventral valves are abruptly reduced in thickness near the tip and terminate in a short spur. That of the ventral valve bears a few minute spines, while that of the dorsal valve (Fig. III. C) is beset with short, stout setae. The circum-anal pore ring is composed of a double row of pores (Fig. III. B).

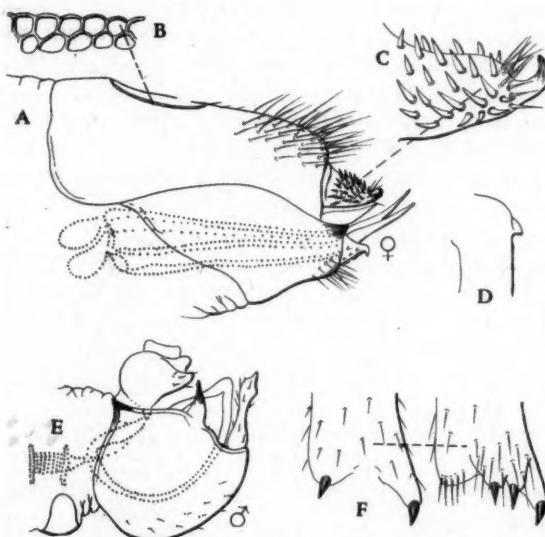


Fig. 3. *Epicarsa corniculata* Crawford. A.—genitalia of female; B.—portion of circum-anal pore ring of female; C.—apex of dorsal valve of genitalia of female; D.—base of posterior tibia of adult; E.—genitalia of male; F.—apex of posterior tibia of adult.

The posterior tibiae bear a very small spur at the base (Fig. III. D) and rather small, black spines at the apex as indicated in Fig. III. E. The basal segment of the posterior tarsi bears a single black, claw-like spine.

The wings agree exactly with the figure given by Crawford.

Phyllopecta diospyri (Ashmead).

1926. *Phyllopecta diospyri* (Ashmead), Ferris, Can. Ent. 58:16; fig. 3.

SPECIMENS EXAMINED. Nymphs only were taken from this species from *Diospyros* or *Naba* at La Providencia, near Acapulco, Guerrero, Mexico (G. F. Ferris). These agree exactly with typical nymphs from southeastern United States, and while the adults might possibly be somewhat different the identification may be accepted for the present.

Ceropsylla sideroxyli Riley.

1923. *Ceropsylla sideroxyli* Riley, Ferris, Can. Ent. 55: 254; fig.

SPECIMENS EXAMINED. Nymphs only were taken at Zacatula, near the mouth of the Balsas River from *Sideroxylon* sp. (G. F. Ferris). These agree exactly in structure and in their pitmaking habits with specimens from Florida.

NEW CERAMBYCIDAE. (COLEOPTERA).*

BY GEORGE R. HOPPING,
Vernon, B. C.

***Phymatodes fulgidus* n. sp.**

Brightly shining, brown above, lighter ochraceous brown beneath, form more elongate and narrower than most of the fasciated species, such as *P. varius* and *P. nitidus*. Length 6.25 mm., breadth 1.75 mm.

Head shining, with sparse, fine punctures; frontal sulcus in the shape of an inverted shallow "V" with a short median vertical sulcus meeting the vertex; eyes deeply emarginate; antennae two-thirds the body length, the second segment over half the length of the third and about half the length of the fourth; palpi light ochraceous brown.

Prothorax with long, very fine and sparse hairs; pronotum about as long as wide, strongly shining, polished, with exceedingly fine and widely separated punctures, the arcuation of the sides moderate, a little more abrupt at the middle, apex and base about equal, the latter slightly marginate; scutellum evenly rounded behind, naked and polished.

Elytra rather coarsely and densely punctate but shining, practically devoid of pubescence with the exception of a few long hairs at the apices.

Ventral surface shining, with sparse, fine pubescence; prosternum transversely carinulate, the remainder of ventral surface sparsely and finely punctate.

Legs light brown, femora strongly clavate, the tarsal pad of hairs rather evident.

Holotype, (♀), Lorna B. C., July 10, 1925, H. A. Richmond. No. 2842 in the Canadian National Collection, Ottawa.

Paratype, same locality and collector as above, June 27, 1925, in the collection of Ralph Hopping.

This species resembles *P. aeneus* LeConte, but is distinguished by the V-shaped frontal sulcus, the polished pronotum with very fine, sparse punctures, and the absence of hairs on the elytra. *P. aeneus* has the frontal sulcus poorly developed and transverse, and the punctures on the pronotum much coarser and quite dense; also the elytra has long sparse hairs and the third antennal joint is relatively much longer.

***Clytus canadensis* n. sp.**

Length 7-8.5 mm.; breadth 2-2.4 mm.

Head and prothorax dull black, elytra, antennae, and legs dark shining brown. Head with vertex covered with large shallow punctures, becoming smaller and deeper on the front and somewhat confused; eyes having the usual emargination; antennae not over half the body length, slightly thickened apically, sparsely covered with decumbent, short, brown hairs.

Prothorax as wide as long, evenly, arcuately rounded at the sides, densely and finely punctato-rugulose, sparsely covered with long, erect hairs; pronotum without fasciae; scutellum clothed with gray pubescence.

Elytra distinctly wider than prothorax, the margins parallel, finely granulate punctate, uniformly clothed with decumbent, sparse, brown pubescence, becoming gray on the fasciae which are disposed as follows: a short faint subhumeral dash; a fascia beginning at suture just behind the scutellum, passing

*—Contribution from the Dominion Entomological Branch, Ottawa, Ont.

steeply obliquely backward, and gradually curving to the margin at basal third; another fascia at apical third, beginning at suture, slightly arcuate, passing obliquely to the margin; elytral apices rounded, faintly tipped with gray pubescence.

Ventral surface sparsely clothed with fine, brown pubescence, with condensed gray patches on the posterior portions of the mesepisterna, metepisterna, and on the lateral, posterior margins of the abdominal segments.

Holotype, ♂, Creighton Valley, Lumby, B. C., July 12, 1922, R. Hopping; No. 2841 in the Canadian National Collection, Ottawa.

Allotype, ♀, same data as above except date, July 3, 1922.

Paratypes, nine, from Christina Lake, Trinity Valley, Lac Kim, and Mid-day Valley, British Columbia.

This species is easily recognized by the absence of pronotal fasciae which are common to other *Clytus* species, and by the fascia at apical third which starts nearer the scutellum than in any other of our species. It is very closely allied to a species from France, of which there are two specimens before me, labelled *Clytus rhamni* Germ.

Xylotrechus bowditchi n. sp.

Form slender, elongate, cylindrical, head almost black, prothorax lighter, elytra still paler brown. Length of body 13.0 mm., breadth 3.75 mm.

Head with the frontal carination Y-shaped, dull, with moderate punctures; frontal with sparse, gray pubescence extending up on the vertex, the latter with the two finely granulate areas characteristic of males of the *undulatus* group; antennae moderately slender, about half the body length, the third segment as long as the first and second combined.

Pronotum almost as long as wide, the arcuation of the sides more pronounced basally, the basal margin considerably narrower than the anterior, the surface with rough cariniform sculpturing, without fasciae, uniformly and sparsely covered with short, semi-erect, gray pubescence.

Elytra slightly wider than the pronotum, the sides subparallel, apices subtruncate, sculpturing coarse, the surface sparsely covered with decumbent, fine, brown hairs, which become amber coloured on the markings, these arranged as in *undulatus* but faint and with no apical patch.

Ventral surface sparsely and uniformly covered with fine, gray pubescence and without any light coloured spots or bands.

Legs sparsely covered with short, gray pubescence.

Holotype, ♂, Florissant, Colorado, (8000 feet), C. A. Frost, in the collection of Mr. Frost.

This species is near *undulatus*; but the longer antennae, rougher sculpturing of the pronotum and elytra, absence of pronotal fasciae, uniform ventral vestiture without spots or bands, the more slender elongate form, and amber markings appear sufficient to establish it as a species. LeConte has made the following note on some specimens which are apparently of this species. After the designation, *X undulatus*, with a question mark, he has written:

"A form occurs which differs from the usual northern specimens of this species by the markings being narrow and imperfect, and the sculpture of the elytra more distinct. It is not uncommon in the Rocky Mountain region, and was found by Mr. Bowditch at Florissant (8000 feet)."

A NEW EUPHYDRYAS (LEPIDOPTERA).*

BY J. H. McDUNNOUGH,

Ottawa, Ont.

In working over a collection of Diurnal Lepidoptera sent me by Mr. R. E. Hutchins of the Montana Agricultural College, Bozeman, Mont. for identification I came across a small series of a *Euphydryas* species which represents an apparently undescribed race or species belonging, according to genitalia, in the *nubigena-taylori-editha* complex. This group of so-called species, as I recently pointed out (1927, Canadian Entomologist, lix, 156) is distinguished genetically by the reduced uncus and the shape of the harpe (*op. cit.* Pl. III, fig. 1), these two organs being practically similar throughout the group. This similarity led me at the time to suggest that we were dealing with a number of races of a single variable species; if this be so the oldest name, *nubigena* Behr, would apply as the specific name, but lacking any further confirmatory evidence I prefer at the present time to adhere to the old idea and shall therefore assign to the specimens before me specific rank. It might be noted in passing that this is—as far as I know—the first authentic record of the occurrence of a member of this group east of the continental divide: *nubigena* has been frequently recorded from Montana, Colorado etc., but the records were based on the misidentification of *anicia* as this species; Elrod in his Butterflies of Montana (p. 73) records *taylori* Edw. from Montana but his figure very evidently represents *anicia*: as far as I can tell the present species, however, is figured in the same work (Pl. V, figs. 2, 6) under the name of *anicia*.

I take pleasure in naming this interesting species after the collector and append the following detailed description.

***Euphydryas hutchinsi* n. sp.**

Male. Palpi orange-red, pale yellow at base. Antennae orange, the stalk ringed with pale yellow. Thorax and wings blackish with slight sprinkling of straw colored scales at base of costa and along inner margin of primaries, and black and white checkered fringes. Primaries with a complete orange-red marginal band, narrowly cut by the black venation; interior to this a row of narrow, pale straw-yellow lunules, preceded by a curved row of larger, oval, similarly colored spots in a black field; a curved discal row of quadrate, pale yellow spots considerably tinged in central section with orange-red; cell orange-red with an irregularly oval pale yellow basal spot, a quadrate median one of same color and three superimposed yellow spots at end of cell, forming a slightly curving row and adjacent to the upper portion of the discal row of spots; all yellow cellular spots bordered by a black line; on inner margin interior to the last spot of the discal row an irregularly rectangular yellow patch. Secondaries with an orange-red marginal band as on primaries; the yellow lunules interior to this are much larger and better defined than on primaries and are preceded by a complete and distinct row of oval, orange-red spots, narrowly separated by black and at times with pale-yellow central scaling; the yellow discal row of primaries is continued, with slight indication of red shading outwardly on the costal half; basad of this a narrow orange-red band not reaching beyond the cell which contains two ir-

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agri., Ottawa.

regularly shaped pale yellow spots; below these is an indication of a similarly colored spot. Beneath primaries light orange-red with the yellow maculation of upper side distinctly reproduced and mostly black-edged, the discal row of spots, except at costa entirely red. Secondaries with the usual maculation, the post-discal orange-red spots being faintly edged with pale yellow and at times with yellow central dot and the narrow portion of the discal yellow band, exterior to the black dividing line, being mostly yellow with only faint traces of orange-red scaling.

Female. Much as in male but the terminal orange-red band tends to break up into irregularly shaped spots and the two outer rows of yellow spots are in general somewhat stronger. Expanse ♂, 32 mm. ♀, 35 mm.

Holotype.—♂, Milligan Canyon, Jefferson Co., Mont. May 23, (R. E. Hutchins); No. 2876 in the Canadian National Collection, Ottawa.

Allotype.—♀, same data as holotype.

Paratypes.—8 ♀, same data as holotype; five of these in the collection of the Montana State College, Bozeman, Mont.

The species is very similar to *tayleri* Edw. in the maculation of the upper side but on the underside of secondaries lacks the complete red edge to the discal yellow band; in this latter respect it is closer to *augusta* Edw., being distinguished by the better development of the pale spot at base of cell on both sides of primaries but particularly on the under side.

On the upper slopes of Mt. Washburn, Yellowstone National Park at about 10,000 ft. altitude I collected on July 25th, 1928 a small series of what is evidently by genitalia an alpine form of *hutchinsi*. Like all high altitude forms it has a rather dull, suffused look as compared with the typical species and a tendency towards an extension of the black areas, due frequently to a diminution in the size of the outer row of yellow spots on both wings. The red color is less vivid on both surfaces and the yellow shows a distinct tendency to become whitish; the average size is also decidedly smaller (♂, 26 mm.-30 mm. ♀, 30 mm.-34 mm.). The species was not seen elsewhere although of course it is quite possible that earlier in the season it may occur in the more or less typical form at lower altitudes in the Park. I propose the varietal name *MONTANUS* for this high altitude race, the Holotype, Allotype, and 5 ♂, 2 ♀, Paratypes, all from the above-mentioned locality, No. 2877 in the Canadian National Collection.

REVISION OF THE AMERICAN SPECIES OF ARCHYTAS
(TACHINIDAE, DIPTERA).*

BY C. HOWARD CURRAN,

Ottawa, Ont.

(Continued from page 226)

Archytas peruanus n. sp.

(Figs. 17, 18)

Black, thorax thinly pollinose; pleura black haired, squamae white. Length 12 to 13.5 mm.

Male. Face and cheeks yellow; head white pollinose; hair black; occipital pile yellowish. Front as wide as either eye, the vitta rusty reddish. Palpi and basal two antennal segments reddish; third antennal segment black, convex above, shorter than second; penultimate aristal segment elongate, the preceding seg-

ment only about one and a half times as long as wide.

Thorax thinly cinereous pollinose; scutellum brownish red; propleural pile yellow.

Legs black; pulvilli pale yellowish. Wings cinereous hyaline, luteous basally and anteriorly.

Abdomen shining black, the sides of the intermediate segments sometimes obscurely reddish, a trace of pollen at the bases of the segments, the fourth segment with rather thin pale pollen which has brownish tinge and is only visible in certain lights. Lobes of fifth sternite with deep, triangular excision on inner edge, the apical edge transverse, gently convex. Outer forceps with a large, gobular basal swelling and a pair of narrow, curved arms. Posterior forceps deeply concave, without thin lobes, the median arm broadly, shallowly excised at apex.

Female. Front one-fifth wider than eye, thorax more distinctly pollinose.

Type.—♂, Oroya, Peru, May 8, 1914; *allotype*, ♀, Oroya, May 7, 1914 in United States National Museum.

Paratypes—♂, Oroya, May 8 and 3 ♀, May 7, 1914, all collected by Dr. C. H. T. Townsend.

Archytas setifacies n. sp.

Very similar to *peruanus*, the mesonotum with greyish ochreous pollen. Length, 11 mm.

Female. Differs from *peruanus* as follows: the third antennal segment is fully as long as the second and more brownish (not deep black), the basal aristal segment is a little more than half as long as the following segment, the thorax is more thickly pollinose and the abdomen castaneous with a darker median vitta. The sparse, parafacial hair is much coarser than in other species and is inclined to form several bristles below.

Holotype—♀ and ♀ *paratype*, Chapada, Brazil, Nov., (Williston Coll.), in American Museum of Natural History.

Archytas palliata n. sp.

(Fig. 19)

Black, the abdomen brownish, with tessellate cinereous-yellow pollen. Length, 12 mm.

Male. Face and cheeks yellow, the head white pollinose. Front five-sixths as wide as eye, the hair fine. Pile with yellowish tinge. Cheeks and parafacials with long black hair. Palpi reddish. Antennae reddish, the third segment black, with sub-parallel sides, widening apically, broadly rounded above at apex; penultimate aristal segment three times as long as wide, the preceding segment shorter than wide.

Thorax moderately cinereous pollinose, with yellowish tinge above, the vittae distinct; scutellum wholly dark. Pile, including that on propleura, black.

Legs black; middle tibiae with three antero-dorsal bristles; pulvilli elongate.

Wings cinereous hyaline, brownish sub-basally, the anterior crossvein clouded. Squamae white with yellow border. Halteres with brown knob.

Abdomen castaneous above, black below, almost wholly cinereous yellow pollinose, the fourth segment more ochreous, the pollen tessellate. Second segment with pair of marginals, third and fourth with row, the fourth with two rows

of discals on apical half. Lobes of fifth sternite separated basally, short, slightly oblique apically, longest inwardly. Outer forceps consisting of a single broad arm; arm of inner forceps turned sharply upwards, pointed at tip.

Type—♂, Carillo, Costa Rica (Schild and Burgdorf) in United States National Museum.

Archytas pollinosus n. sp.

(Fig. 20)

Black, head yellow, scutellum brownish red, abdomen extensively pollinose. Length, 14 mm.

Male. Front almost as wide as eye, the parafrontals and occiput dull ochreous pollinose, the pollen elsewhere white. Frontal vitta rusty reddish. Occipital pile yellowish; hair black. Palpi and basal two antennal segments red; third antennal segment black, small, narrow, hardly as long as the second, arista with the penultimate segment about five times as long as wide.

Thorax with rather thin ochreous grey pollen, sub-shining, the vittae distinct from posterior view. Pile black; yellow on propleura.

Legs black, with grayish pollen; tibiae obscurely brownish red. Pulvilli long.

Wings pale brownish grey. Squamae whitish with pale yellow border. Halteres reddish brown.

Intermediate abdominal segments with a little more than the basal half of each segment grey pollinose, the pollen not dense and somewhat tessellate, the fourth segment with the basal third in the middle, widened to one-half at the sides, pollinose. Second segment with a pair of strong marginals, the third with a row, fourth with three rows of bristles on apical half. Fifth sternite with the lobes well separated at the base, short, with an excision before their apices, the short, inwardly projecting arm polished black. The outer forceps are broad and emit a strong inwardly directed apically curved arm from their lower extremities, the side lying next to the posterior forceps swollen and broadened so as to appear as a rounded process when viewed from above. The posterior forceps are as wide as long, shallowly concave, the arm short and broad, deeply excised at the apex.

Female. Front two-sevenths wider than either eye; two pairs of orbitals; abdominal pollen a little more extensive and more tessellate.

Holotype—♂, allotype ♀ and ♀ paratype, Chile (A. Faz), ♀, Santiago (Dr. Porter). Type in Deutsches Ent. Mus., Dahlem.

Archytas varicornis n. sp.

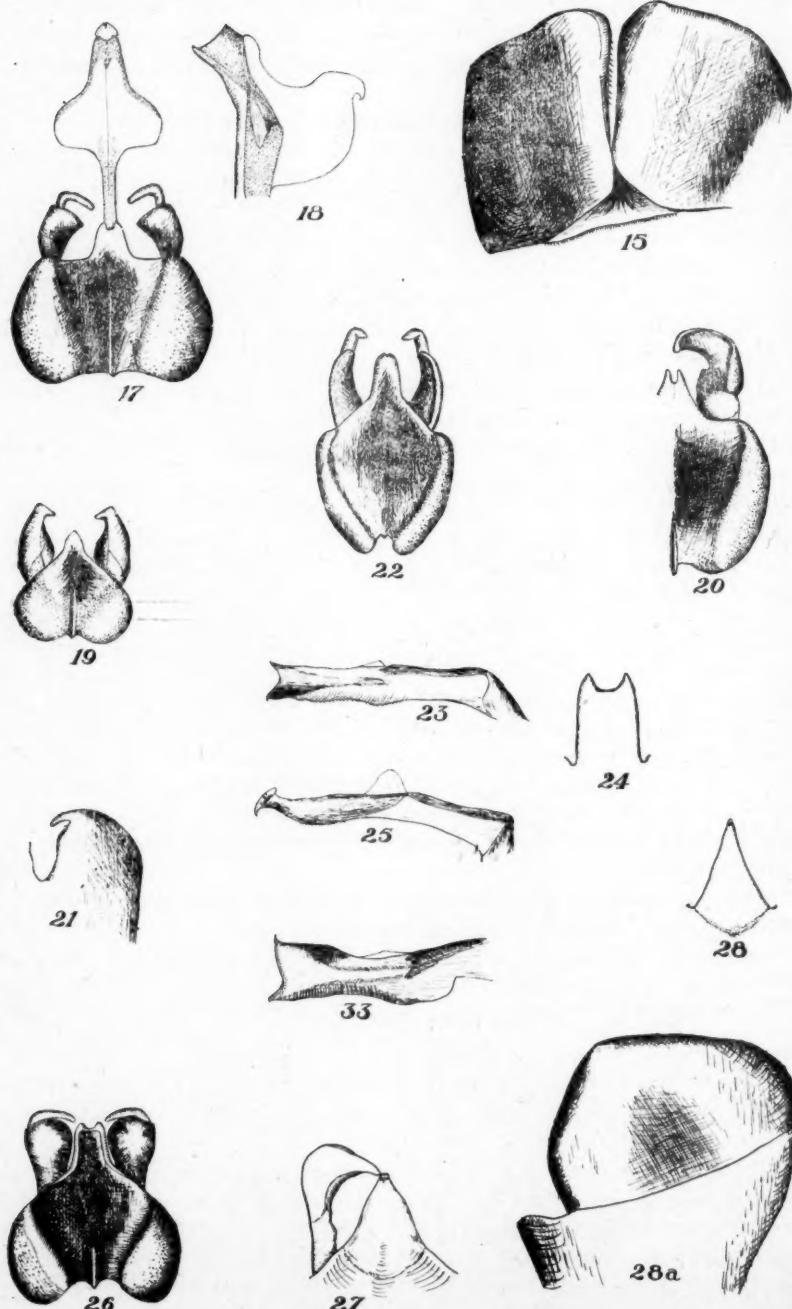
(Fig. 21)

A large species apparently related to *diaphana* Fabr. but with shining black or castaneous abdomen with darker median vitta. It differs in lacking pale pile on the ventral portion of the first two tergites.

Length, 16 to 17 mm. *Male*. Front five-eighths to one-third as wide as eye, strongly widening anteriorly; cheeks almost half as wide as eye-height. Parafrontals and occiput behind eyes black; head elsewhere reddish yellow with pale yellow pollen. Pile of head yellow except on parafrontals which are yellowish pollinose. Antennae varying from wholly black to red with the third seg-

OCT., 1928.

PLATE 18.



AMERICAN SPECIES OF ARCHYTAS.

ment black except basally and below, the third segment about as long as second, narrow, convex above.

Mesonotum bluish black with yellowish pollen which is dense in front and becomes thin behind the suture, the sides and pleura greyish pollinose; notopleura, posterior calli and scutellum brownish with blue reflections. The pile of the pleura is yellow except some hairs on posterior part of the mesopleura above or sometimes the mesopleura wholly black haired, the pile elsewhere yellow; dorsum always with coarse black hair.

Wings brownish along the veins. Squamae normally brown, rarely only strongly brownish tinged. Halteres reddish brown or orange.

Abdomen with brownish red pollen on fourth segment except the disc, the pollen rarely whitish and forming narrow basal fasciae on each segment. The posterior forceps are strongly tapering with the apex turned at almost a right angle, the space between the lobes broadly concave. The outer forceps are split into two nearly equal arms, the lower one somewhat the shorter.

Female. Front two-thirds as wide as eye, with two pairs of strong proclinate orbitals and three pairs of reclinate ones, the frontal bristles weak opposite them. None of the females show pale pollen on abdomen.

Holotype.—♂, San Rafael, Vera Cruz, Mexico (C. H. T. Townsend), in United States National Museum.

Allotype.—♀, Cayuga, Guatemala, Aug., 1915 (W. Schaus).

Paratypes.—♀, same data as allotype; ♀, Venodio, Mexico (Ruscke). Paratype No. 2825 in the Canadian National Collection, Ottawa, ♂ ♀, Farm La Caja, San Jose, Costa Rica, June, July 1924 in Hamburg Museum; ♂, Chapada, Brazil, Nov. (Williston Collection) in American Museum of Natural History.

Analis Group description

Face, cheeks and lower part of occiput yellow in ground color, silvery white pruinose; front darker, blackish or brownish, yellowish or greyish yellow pruinose, more thickly so along the orbits. Palpi reddish. Antennae reddish, the third joint usually brown or black with base more or less reddish below. Thorax and scutellum densely olive-yellowish pollinose with very slender dark vittae; scutellum reddish; pleura yellowish pilose. Abdomen black or castaneous, the fourth segment pale or brownish pollinose, the middle of its dorsum often appearing without pollen. First segment without bristles, second with a pair of strong marginals, third and fourth with row, the fourth with two rows of discals on apical one-third.

***Archytas apicifera* Walker.**

(Figs. 22 and 23)

?*Jurinia amethystina* Macquart, Dipt. Exot., II (3), 42, 1843.

Tachina apicifera Walker, List Dipt. IV, 718, 1849.

Tachina californiae Walker, Dipt. Saund., 270, 1852.

Jurinia apicifera Williston, Trans. Ent. Soc. Amer., XIII, 300, 1886; Townsend, Journ. N. Y. Ent. Soc. V, 177, 1897.

Archytas analis Coquillett, Rev. Tach., 142, 1897.

Male. Front as wide as eye, usually mostly pale pilose, black haired above; cheeks and face yellowish haired. Third antennal segment mostly blackish; penultimate aristal segment about four times as long as wide, the preceding segment scarcely longer than wide. Pile of thorax mostly yellowish, some coarse black hair behind the suture. Wings grayish hyaline, the base yellowish. Squamae-

whitish with yellowish border. Knob of halteres brown. Abdomen shining black, the incisure of the first and second segments broadly greyish white, pollinose; broad sides of fourth segment thinly yellowish white pollinose, the apex broadly red.

Lobes of fifth sternite with only the inwardly directed arm. Outer forceps with two long arms, of almost equal size. Posterior forceps with the ridges undeveloped, deeply concave, the apical arm long and broad, tapering, with a short apical slit.

Female. Mesonotum black haired except laterally and anteriorly, fourth abdominal segment often mostly reddish.

Specimens are from all the Canadian Provinces, Georgia, District of Columbia, Iowa, California, Oregon, Washington, Illinois, New York and New England States. The species is common throughout its range.

Archytas nivalis n. sp.

(Figs. 24, 25)

Length, 15 mm. *Male.* Pollen of head rather yellowish, the parafrontals chiefly yellow haired in front. First two antennal joints reddish.

Thorax ochreous pollinose. Pile before the suture very largely fine, yellow, a broad vitta sub-laterally with short black hairs, and also a few scattered about the middle. Pleura below and posterior surface of front femora greyish pollinose. Wings cinereous, yellowish in front except apically. Squamae white; halteres yellow, the knobs infuscated except the apex.

Abdomen shining black, the first segment and sides of fourth white pollinose. Apex of posterior forceps as in figure 24; the basal part with the sides thinned and broad, densely long pilose.

Female. Very similar but the yellow hairs on the mesonotum are limited to the sides and broad anterior margin. Abdomen a little bluish tinged except the apical segment.

Differs from *apicifera* in usually having rather brighter pollen on the thorax, the apical arm of the posterior forceps broadly excised at the apex and the lobes high and strongly developed. The lobes of the fifth sternite are shaped as in *apicifera* but the lower arms of the outer forceps are much larger and more strongly curved.

Holotype—♂, Washington, D. C., October 29, 1926 (N. K. Bigelow), No. 2823 in the Canadian National Collection, Ottawa.

Allotype—♀, Great Falls, Va., July 15, 1913 (Wm. T. Davis).

Paratypes—♂, Glen Echo, Md., Aug. 2, (J. M. Aldrich); ♂, Rockville, Pa., Aug. 8, 1908 (W. R. Walton); ♂, Cabin John, Md., Aug. 18, 1914 (R. C. Shannon); ♂, Montgomery Co., Md., June, 1911, (Wm. T. Davis); ♀, Chain Bridge, Md., Sept. 12, 1913 (R. C. Shannon). Paratypes in the United States National Museum.

Archytas cirphis Curran.

(Fig. 26)

A. cirphis Curran, Proc. Haw. Ent. Soc., VI, 497, 1927.

Belongs to the *analis* group, in which the pleura are yellowish pilose, the thorax wholly pollinose and the abdomen shining black with the apical segment more or less distinctly pollinose.

Length, 10 to 12 mm.

Male. Lower part of head yellow in ground color, wholly covered with white pollen; front aeneous, covered with greyish ochreous pollen, the frontal vitta rusty orange; upper portion of occiput pale ochreous pollinose. Pile of head whitish with yellowish tinge above. Upper two thirds of front with stiff black hairs; three or four finer bristles outside the frontal row below; orbita wanting; inner verticals long, decussate, the outers much smaller and proclinate or directed obliquely backwards; a small bristle, of equal size with the post-ocellars, behind each inner vertical. Antennae brownish red, the third segment black; the first two segments usually largely infuscated, probably shining reddish brown in fully mature specimens. Front at vertex seven-eighths as wide as greatest width of eye. Palpi reddish, long, moderately broadened apically.

Mesonotum bronze-black, densely yellowish grey pollinose, the shining vittae extremely narrow; hair and bristles black; pleura with similar pollen to dorsum, clothed with fine yellow pile which also covers the notopleura and perpendicular part of the humeri; sternopleurals 2-1. Scutellum brownish red, brownish yellow pollinose, with two pairs of strong marginals and two or three weaker pairs in addition to the decussate apicals; above the apicals a pair of slightly weaker, slightly diverging bristles and one or two additional pairs of horizontal ones.

Legs black; tibiae castaneous; anterior femora grey pollinose behind.

Wings lightly cinereous, somewhat yellowish basally; epaulet yellow. Squamae white, yellowish basally; halteres yellow with brown knob.

Abdomen castaneous, with a diffuse black median vitta extending almost to the apex of the third segment, broader basally, tapering behind, fourth segment with rusty brown pollen. First segment without marginals; second with one pair; third with apical row; fourth with two rows on apical half in addition to the apically directed row. Lobes of fifth sternite almost simple, with only a slight inward curve at lower apex. Posterior forceps with the lateral ridges somewhat longer than high; apex of the broad anterior arm shallowly, broadly notched. Outer forceps with the lower arm strongly swollen and not as long as the narrow upper arm.

Female. Front one-sixth wider than eye; two orbita.

Described from 4♂, 8♀, Los Mochis, Sinaloa, Mexico, December 1923 and February 1924, reared from *Cirphis* pupae by H. T. Osborn.

Types in the United States National Museum. Paratypes in Hawaiian Sugar Planters' Association Collection and No. 1559 in the Canadian National Collection, Ottawa.

The flies were reared from pupae of Lepidoptera collected in sugar cane fields during 1923. Dr. Zwezey states that *Cirphis latiuscula* was the chief species present in the cane fields, while *C. cholica*, and perhaps other species, was present.

Archytas plangens n. sp.
(Fig. 27)

Length, 17 mm. **Male.** Face, cheeks and lower occiput yellow, white pruinose; front blackish, yellow pollinose, more densely so along the orbits; frontal vitta orange, brown on upper third, the ocellar triangle greyish; occiput

greyish white pruinose, the hair pale yellow; cheeks and parafacials with fine whitish or yellowish tinged hair. Antennae black, the first two joints reddish or largely infuscated, the third about as long as second, convex above, rounded at apex, the lower edge very slightly convex; basal aristal joint not longer than wide, the second elongate.

Thorax densely olive yellow pollinose, the vittae slender and all interrupted at the suture; four posterior acrosticals, the anterior two very small. Sides of mesonotum and the pleura wholly clothed with fine, yellowish hair. Scutellum yellowish in ground color; decussate bristles present.

Legs black; anterior femora greyish yellow pollinose behind; front coxae with yellow hair only along anterior outer edge; pulvilli long, yellow. Wings lightly cinereous, yellowish basally. Squamae white. Halteres fuscous.

Abdomen castaneous to black; the first segment and median vitta always black; incisure of first two segments broadly greyish pollinose; fourth segment wholly pale yellowish white pollinose, with a darker stripe in some views. Second segment with pair of strong marginals.

Female. Front nine-twenty-sixths of head width; third antennal joint sometimes reddish below. Abdomen blackish with fourth segment castaneous.

Holotype—♂, Ecuador (Parish), (Aldrich Collection), in United States National Museum.

Allotype—♀, same data.

Paratypes—♀, Cayuga, Guatemala, April. (Schaus and Barnes), No. 2824 in the Canadian National Collection, Ottawa; ♀, Harlingen, Texas, July 12, 1921 (F. M. Hull).

(To be continued)

ANNUAL MEETING ENTOMOLOGICAL SOCIETY OF ONTARIO

The Sixty-fifth Annual Meeting of the Entomological Society of Ontario will be held at the Ontario Agricultural College, Guelph, on Thursday and Friday, November 15th and 16th, 1928.

